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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,245	07/30/2003	Akihiko Itami	56232.92	9380

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EXAMINER	
RODEE, CHRISTOPHER D	
ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/630,245	ITAMI, AKIHIKO	
	Examiner	Art Unit	
	Christopher RoDee	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) *10 and 11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/22/03*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *attached* .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 10 and 11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected apparatus, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 13 May 2005 and clarified in the telephone interview of 24 May 2005 (see attached interview summary).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsukawa *et al.* in US Patent 5,629,117 in view of *Handbook of Imaging Materials,* Diamond, Arthur S & David Weiss (eds.) pp. 149-168.

Katsukawa discloses an electrophotosensitive material having a conductive substrate and a either a single layer photosensitive layer or a dual layer photosensitive layer with a charge transport layer and a charge generation layer (col. 1, l. 13-24; col. 23, l. 1-32). Example 705 shows a specific electrophotosensitive material with a binder resin given by the formula (4,5-1), which has a viscosity-average molecular weight of from 20,000 to 25,000 (col. 8, bottom; col. 88, l. 37-50; Table 104).

The instant specification teaches that the claimed creeping modulus can be obtained by using a polycarbonate resin having a range of viscosity-average molecular weight with a charge transport compound having a relatively high molecular weight (spec. p. 32). Particularly preferred polycarbonates are given on page 33. The general formula of resin PC-1 is the same as used in Katsukawa's resin (4,5-1). The viscosity-average molecular weight of Katsukawa's polycarbonate is substantially similar to specification polycarbonate PC-1 (Mv = 27,000). The hole transport and electron transport compounds in Example 705 have relatively high molecular weights noting the formula for compounds 6-1 and 12-1. Because of these similarities it appears that Katsukawa inherently has creeping modulus specified for the instant organic photoreceptor.

Katsukawa does not disclose the specific process steps claimed for using the material but Diamond and Weiss teach the conventional process steps in the electrophotographic process using an imaging apparatus. These steps include a charging step, an imaging or light exposure step of the photoreceptor to form an electrostatic latent image, a development step to develop the latent image with toner, a transfer step to transfer the toner image to a receiver directly of via an intermediate member as in full color imaging, a fixing step to fix the toner image to a final receiver, and a cleaning step to clean residual toner from the surface of the photoreceptor such as by a cleaning blade (pp. 149-168).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the electrophotosensitive material of Katsukawa in the conventional imaging operation discussed by Katsukawa because Katsukawa's material is designed for use in an electrophotographic imaging apparatus and Diamond teaches the conventional subsystems of the apparatus and steps used by the subsystems in order to form an image. The process discussed by Diamond, particularly for color imaging, is conventionally used in the art.

Claims 1, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa *et al.* in US Patent Application Publication 2002/0045116 in view of *Handbook of Imaging Materials,* Diamond, Arthur S & David Weiss (eds.) pp. 149-168.

Morikawa discloses an imaging process where a voltage is applied to the primary charging assembly **13** to charge the surface of the electrophotographic photosensitive member **11** electrostatically, and then the surface of the electrophotographic photosensitive member is subjected to exposure light **14** modulated in accordance with image signals corresponding to an original, forming an electrostatic latent image thereon. Next, a toner held in the developing assembly **15** is allowed to adhere to the electrophotographic photosensitive member **11** to develop (render visible) the electrostatic latent image on the electrophotographic photosensitive member to form a toner image. The toner image formed on the electrophotographic photosensitive member is transferred onto a transfer medium **17** such as paper fed from a paper tray (not shown), by means of the transfer charging assembly **16**. A cleaner, such as a cleaning blade **19**, collects the residual toner on the electrophotographic photosensitive member without being transferred to the transfer medium **17** (¶ [0078]; Fig. 5).

The photoreceptor has a conductive support, a photosensitive layer, and a surface protection layer (¶ [0013]). The surface protection layer also contains particles, such as conductive particles with a size of 100 nm or smaller (¶ [0043]). The photosensitive layer may comprise both a charge generation layer and a charge transport layer (¶ [0066]). The reference also teaches the hardness and abrasion resistance of the protection layer must be optimized (¶ [0010]).

The photoreceptor is disclosed as having specific indentation depth based on a load test (see Fig. 1). Although this test is different from that disclosed in the instant specification for the creeping modulus of the instant claims (see spec. pp. 74-75), the reference clearly teaches

that the abrasion and resistance must be optimized and that these characteristics are measured by an indentation depth test.

Although an intermediate transfer member is not disclosed in Morikawa during the transfer step, Diamond and Weiss teach the conventional process steps in the electrophotographic process using an imaging apparatus. These steps include a charging step, an imaging or light exposure step of the photoreceptor to form an electrostatic latent image, a development step to develop the latent image with toner, a transfer step to transfer the toner image to a receiver directly of via an intermediate member as in full color imaging, a fixing step to fix the toner image to a final receiver, and a cleaning step to clean residual toner from the surface of the photoreceptor such as by a cleaning blade (pp. 149-168).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the electrophotosensitive material of Morikawa in the conventional imaging operation discussed by Morikawa because Morikawa's material is designed for use in an electrophotographic imaging process including steps of charging, exposure, development, transfer and cleaning and Diamond teaches the conventional subsystems of the apparatus and steps used by the subsystems in order to form an image. Diamond discloses that the use of an intermediate transfer member is conventional in color copying. Thus the artisan would have found it obvious to use the intermediate member when producing a color image. The artisan would also have found it obvious to optimize the hardness and abrasion resistance of Morikawa's photoreceptor because Morikawa teaches that these are result effecting variables in the art and that these characteristics are measured by a indentation process. The artisan would recognize that the instant creeping modulus is also measuring the hardness of the photoreceptor given the similar measurement techniques. Consequently, optimization of the

hardness according to Morikawa would also optimize the hardness measured in the process of the instant invention.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa *et al.* in US Patent Application Publication 2002/0045116 in view of *Handbook of Imaging Materials,* Diamond, Arthur S & David Weiss (eds.) pp. 149-168 as applied to claims 1, 5, and 6 above, and further in view of Kojiima *et al.* in US Patent 6,562,529.

Morikawa and Diamond were discussed above. Morikawa is concerned with the abrasion resistance of the photoreceptor used in the reference's process but does not disclose the use of zinc stearate as an additive to the photoreceptor during the development step.

Kojima does disclosed addition of zinc stearate to the surface of a photoreceptor during development to improve abrasion resistance in an imaging process having a cleaning step (col. 1, l. 54-67; col. 2, l. 26-45; col. 6, l. 4-10; col. 8, l. 4-17; Example 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply zinc stearate to the surface of Morikawa's photoreceptor during the development step because Morikawa is concerned with abrasion resistance on the photoreceptor and Kojima discloses applying zinc stearate to the surface of the photoreceptor in order to reduce abrasion of the photoreceptor.

Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa *et al.* in US Patent Application Publication 2002/0045116 in view of *Handbook of Imaging Materials,* Diamond, Arthur S & David Weiss (eds.) pp. 149-168 as applied to claims 1, 5, and 6 above, and further in view of Tomizawa in US Patent 6,360,071.

Morikawa and Diamond were discussed above. Morikawa and Diamond do not disclose the contact pressure or the surface roughness of an intermediate transfer member. However, Tomizawa teaches that the intermediate transfer member in a multicolor imaging process usefully has a surface roughness Rz of from 2 microns to 10 microns (col. 9, l. 5-12; Figs. 4 & 5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the surface roughness of an intermediate transfer member belt in a multicolor imaging process, as taught by Diamond, because Tomizawa teaches that the Rz surface roughness affects the transfer characteristics and specifically teaches the artisan that a value of 2 microns is effective. The artisan would also have found it obvious to optimize the transfer pressure because this would ensure proper transfer of the toner image to the final receiver.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa *et al.* in US Patent Application Publication 2002/0045116 in view of *Handbook of Imaging Materials,* Diamond, Arthur S & David Weiss (eds.) pp. 149-168 as applied to claims 1, 5, and 6 above, and further in view of Itami *et al.* in US Patent 6,203,962.

Morikawa and Diamond were discussed above. Morikawa is concerned with the abrasion resistance of the photoreceptor used in the reference's process but does not disclose the specific characteristics of the cleaning blade used to clean the photoreceptor surface.

Itami discloses a cleaning blade for cleaning the surface of a photoreceptor without abrading the surface of the photoreceptor (col. 2, l. 32-53). A cleaning blade having a rubber hardness and a repulsion elasticity shown in Table 1 (col. 36) is effective to remove to remove

the toner from the surface of a photoreceptor while not abrading or otherwise damaging the photoreceptor surface. Specific repulsion elasticities include values such as 60%.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the cleaning blade of Itami in the invention of Morikawa because Morikawa discloses that cleaning with a cleaning blade is desired to remove residual toner from the photoreceptor and Itami teaches that a cleaning blade with hardness and repulsion elasticity as specified in Table 1 is effective to remove toner while not damaging the photoreceptor surface. Because each reference is concerned with the similar problems, there is ample motivation to combine them to address these concerns.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdr
27 June 2005

CHRISTOPHER RODEE
PRIMARY EXAMINER